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Claims

1. A method for controlling interfrequency handovers of a mobile station, the mobile station comprising a continuous communication mode and a combined slotted communication mode and measurement mode, the method comprising the steps of:

 - changing the operation of the mobile station into the combined slotted communication mode and measurement mode for preparing an interfrequency handover, if at least a criterion specifying that a quality of a downlink signal relating to a channel on which communication takes place between the mobile station and a mobile communication system in the continuous communication mode is worse than a quality represented by a first target value, is fulfilled, characterized in that the first target value depends on a second target value, the second target value being related to an outer loop power control of a transmission power of the downlink signal.
2. A method according to claim 1, further comprising the step of:

 - updating the first target value at first time instants of those time instants at which the second target value is updated by the power control manner of the transmission power.
3. A method according to claim 2, wherein the first target value is updated for every radio frame.
4. A method according to claim 2, wherein the first target value is updated for every interleaving period.
5. A method according to any one of the preceding claims, wherein the first target value is equal to the second target value.
6. A method according to any one of the claims 1 to 4, wherein the first target value corresponds to a worse quality than the second target value.
7. A method according to any one of the preceding claims, wherein the value for the quality represented by a first target value is determined for every time slot.
8. A method according to any one of the preceding claims, wherein a further criterion specifies that the criterion is to be fulfilled for a certain first predetermined time period.

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9. A method according to any one of the preceding claims, further comprising the step of:

- estimating adjacent channel interference on the channel on which communication takes place in the continuous communication mode.

5 10. A method according to claim 9, wherein said adjacent channel interference is estimated, if the determined value for the quality represented by a first target value is below a predetermined value.

11. A method according to claim 9 or 10, further comprising the step of:

- measuring interference on an adjacent channel in the combined slotted communication and measurement mode.

12. A method according to any one of the preceding claims, further comprising the steps of:

- performing an interfrequency handover to a second channel, and
- after entering a continuous mode in the second channel, inhibiting a further interfrequency handover for a certain second predetermined time period.

13. A method according to any one of the preceding claims, further comprising the step of:

- performing preparatory measurements for an interfrequency handover in the combined slotted communication mode and measurement mode.

20 14. A method according to claim 13, characterized in that it further comprises the step of:

- in the combined slotted communication mode and measurement mode, synchronizing the mobile station with at least one base station before selection of a target frequency and/or the target base station(s) for the interfrequency handover.

25 15. A method according to claim 14, further comprising the step of:

- sending a request (1107, 1108) for the interfrequency handover to the cellular radio system from the mobile station, and wherein the step of synchronization is performed after sending the request.

16. A method according to claim 14, further comprising the step of:

- triggering, based on said preparatory measurements, the synchronization of the mobile station with the at least one base station.

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17. A method according to any one of the claims 14 to 16, wherein the mobile station is synchronized in at least one available target frequency with each base station relating to which said preparatory measurements are made.

5 18. A method according to any one of the claims 14 to 16, wherein the mobile station is synchronized in at least one available target frequency with at least two base stations.

19. A method according to claim 18, wherein said at least two base stations belong to the active set of the mobile station.

10 20. A method according to claim 19, wherein the synchronization is performed with all base stations belonging to the active set of the mobile station.

21. A method according to claim 19, further comprising the step of:
- performing the interfrequency handover to all base stations belonging to the active set of the mobile station

15 22. A method according to claim 18 or 19, **characterized** in that it further comprises the step of:
- performing the interfrequency handover to said at least two base stations.

23. A method according to claim 1, wherein the loop based power control manner is adapted to control the quality of the connection by setting the target value for an inner loop of a closed loop power control.

20 24. A method for controlling an interfrequency handover of a mobile station, the mobile station comprising a continuous communication mode, the method comprising the steps of:

25 - determining a value for a quality factor for a received downlink signal,
characterized in that, said interfrequency handover comprises a blind interfrequency handover and the method further comprises the steps of:
- comparing the determined quality factor value to a first target value for performing the blind interfrequency handover,
- comparing the determined quality factor value to a second target value, and
30 - generating power control commands based on the comparison, the first target value being arranged to depend on the second target value and the second value being arranged to relate to an outer loop power control of a transmission power of the downlink signal.

25. A mobile station arranged to contain a continuous communication mode and a combined slotted communication and measurement mode, the mobile station comprising

- means (1207,1212) for determining a value for a quality factor for a received
5 downlink signal,
- means (1207,1215) for controlling the communication mode of the mobile station, **characterized** in that the mobile station further comprises
- means (1207,1210) for controlling interfrequency handovers, said means for
10 controlling interfrequency handover being arranged to compare the determined
quality factor value to a first target value for performing the interfrequency
handover,
- downlink power control means (1207,1211) arranged to compare the determined
quality factor value to a second target value and to generate power control
15 commands based on the comparison, the first target value being arranged to depend
on the second target value and the second value being arranged to relate to an outer
loop power control of a transmission power of the downlink signal.

26. A mobile station according to claim 25, **characterized** in that it further comprises

- means (1207,1214) for synchronizing the mobile station with a base station, said
20 means arranged to perform the synchronization during the combined slotted
communication and measurement mode before selection of a target frequency
and/or a target base station(s) for an interfrequency handover.

27. A mobile station arranged to contain a continuous communication mode, the mobile station comprising

- 25 - means (1207,1212) for determining a value for a quality factor for a received
downlink signal,
characterized in that the mobile station further comprises
- means (1207,1210) for controlling blind interfrequency handovers, said means for
controlling blind interfrequency handover being arranged to compare the
30 determined quality factor value to a first target value for performing the blind
interfrequency handover,
- downlink power control means (1207,1211) arranged to compare the determined
quality factor value to a second target value and to generate power control
35 commands based on the comparison, the first target value being arranged to depend
on the second target value and the second value being arranged to relate to an outer
loop power control of a transmission power of the downlink signal.